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INFORMATION ON OITICICA OIL

Oiticica oil is obtained from the seeds of the Brazilian tree *Licania rigida*, which belongs to the rose family (Rosaceae). It grows along the banks of rivers and streams in the States of Bahia, Ceara, Maranhao, Paraiba, Piaui, and Rio Grande do Norte. It has been estimated that about half of the wild oiticica trees are located in the State of Ceara. For the most part, the trees grow in semi-arid regions having a dry season of six months or longer. Near Curema in the State of Paraiba is an extensive agricultural experiment station for the propagation of oiticica trees, where many thousands of seedlings are being budded annually from trees producing large crops of seeds. The budded trees begin to fruit within 2 or 3 years, whereas seedlings not budded are 7 or more years old before they blossom, and like many other seedling trees these vary greatly in productivity.

Depending upon the locality, this evergreen tree varies in height from about 40 to about 100 feet. The trees, depending upon the locality and the weather, bloom from July to October, but under normal conditions September appears to be the chief blossoming period. The harvesting of the fruit begins in December and extends through March. The matured fruit consists of a thin friable husk or shell in which is enclosed a single reddish brown seed or kernel, which varies from one to two inches long and from 0.4 to 0.7 inch in diameter. The weight of the kernels range from 2 to 3.5 grams and their oil content varies from 55 to 62 percent.

A characteristic of the tree is to bear heavy one year and little or no fruit the next. It should be mentioned that it is unlawful to ship oiticica "nuts" from Brazil. There the 19 or 20 oil mills express the oil. Two of the oil mills have equipment for solvent extraction of the residual oil in the press cake.

Exposure to air causes this strong drying oil to undergo oxidation rapidly. Direct sunlight causes the oil to solidify, owing to the alpha licanic acid (the chief acid of the glycerides composing the oil) being changed to the much higher melting beta form. Tung oil acts in the same manner. Consequently, it is important to keep these oils away from direct sunlight if it is desired to keep them liquid.

The oil, after standing a short time, tends to assume the form of a cream-colored fat. It is customary now to heat it to about 220° C. for half an hour, which renders it permanently liquid if kept under suitable storage conditions.

Although in physical characteristics and behavior the oil resembles tung oil, experience has shown that in making varnishes, for example, it cannot in all cases be treated in the same manner. Consequently, it was only through much study and experimentation that ways were discovered by which satisfactory products could be made with this oil. Varnishes made with the oil are reported to give films about as hard as those of tung oil varnish, but upon aging they have a greater tendency to become brittle, besides being somewhat less waterproof. However, much use has been found already for this valuable drying oil. For the manufacture of varnish and other protective coatings, the oil is used alone or with other drying oils.

The usual range of the characteristics of the oil are as follows: Specific gravity 15°/15° C., 0.9630 to 0.9697; refractive index at 25°, 1.5130 to 1.5158; saponification value, 186 to 195; iodine number (Wijs), 140 to 152; unsaponifiable matter, 0.4 to 0.9 percent; saturated acids, 10.7 to 11.6; and unsaturated acids, 82.4 to 84.1 percent. The Browne heat (gel) test at 280° is 18 to 24 minutes.

Selected References

Oiticica Oil. Anon. Paint Manufacture, vol. 6, p. 116 (1936).

Oiticica Oil: A New Product From Brazil. M. E. Marvin. Drugs, Oils and Paints, vol. 51, p. 520 (1936).

Identity of the Oiticica Tree and Uniformity of the Oil. C. P. Holdt. Drugs, Oils and Paints, vol. 52, p. 316 (1937).

Oiticica Oil: Preparation of Stand Oil. Anon. Oil and Colour Trades Journal, vol. 92, p. 828 (1937).

The Story of Oiticica Oil. Anon. Drugs, Oils and Paints, vol. 54, p. 310 (1939).

Cicoil. C. P. Holdt. Drugs, Oils and Paints, vol. 54, pp. 54, 86, 88, 90 and 91 (1939).

Continuous Laboratory Method for Bodying Oiticica Oil. V. Marchese. J. Mattilo and L. T. Work. Paint Industry Magazine, vol. 55, no. 4, p. 122 (1940).

Oiticica - Facts About Its Use and Comparison with Tung Oil.

G. Eisenschiml. Paint, Oil and Chem. Rev., vol. 103, no. 8, p. 32.

Oiticica Oil. N. R. Fisk. Paint Technology, vol. 7, p. 3 (1942).

These references should be available for consultation in comprehensive public libraries or in technical libraries.

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